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Appendix A
Documents Reviewed

APPENDIX A

Documents Reviewed

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Appendix B
Five-Year Review Site Inspection Checklist

APPENDIX B

Five-Year Review Site Inspection Checklist

The site inspection checklist is presented in this appendix. Table B-1 presents the individuals that were present for the site inspection performed on April 10 and 11, 2006.

TABLE B-1
Site Inspection Team Roster, April 10 and 11, 2006
Third Five-Year Review Report, Stringfellow Superfund Site, Riverside County, California

Name	Title	Affiliation
Ziggy Kostecki	Hazardous Substances Engineer	DTSC
Charnjit Bhullar	USEPA Remedial Project Manager	USEPA
Alexa Stamets	Project Manager	CH2M HILL
Tom Perina	Project Consultant	CH2M HILL
Ken Martins	Senior Technologist	CH2M HILL

I. SITE INFORMATION	
Site name: Stringfellow Superfund Site	**Date of inspection:** April 10 and 11, 2006
Location and Region: Riverside, CA, Region 9	**EPA ID:** CAT080012826
Agency, office, or company leading the five-year review: EPA Region 9	**Weather/temperature:** Cool, around 60° F. Overcast. Afternoon of April 11, 2006, transitions to sunny, around 65°F.

Remedy Includes: (Check all that apply)

☑ Landfill cover/containment
☑ Access controls
Institutional controls
☑ Groundwater pump and treatment
☑ Surface water discharge collection channels
☑ Erosion control

Attachments: ☑ Inspection team roster attached ☑ Site map attached [in report]

II. INTERVIEWS

O&M site manager

Name : Ziggy Kostecki Title: Hazardous Substances Engineer

Interviewed: April 11, 2006 Phone No.: 951/360-6942

Problems, suggestions:

- Department of Toxic Substances Control's (DTSC) onsite operations and maintenance contractor, Earth Tech, has insufficient resources to maintain the site's reporting and maintenance schedule. This has resulted in delays in the project schedule.
- Routine groundwater monitoring should continue to establish trends in constituent concentrations in groundwater in Zones 1, 2, and 3, where extraction wells were last installed in 1998. The trends in concentrations in these areas are difficult to ascertain with only 8 years of monitoring data.

Refer to the interview record for Mr. Kostecki for additional suggestions identified during the interview.

NOTE: All referenced attachments can be found in Five-Year Review Report.

Other interviews:

1) Allen Wolfenden/DTSC
2) Allen Winans/DTSC
3) Roger Paulson/DTSC

III. ONSITE DOCUMENTS AND RECORDS VERIFIED (Check all that apply)

O&M Documents

☑ O&M manuals ☑ Readily available ☑ Up to date
☑ As-built drawings ☑ Readily available ☑ Up to date
☑ Maintenance logs ☑ Readily available ☑ Up to date

Remarks: Maintenance logs provided in monthly operations, maintenance, and monitoring reports. O&M manuals were updated in December 2005/ January 2006. The O&M Plan that addresses inspection of the cap and surface drainage channels is in the process of being updated (last updated in 2000).

☑ **Site-Specific Health and Safety Plan** ☑ Readily available ☑ Up to date (December 30, 2005)
☑ Contingency plan/emergency response plan ☑ Readily available ☑ Up to date

Remarks: The Contingency plan/emergency response plan is included in Chapter 6 of the Safety, Health, and Emergency Response Plan (SHERP), 2005 Annual Update (Earth Tech 2005).

☑ **O&M and OSHA Training Records** ☑ Readily available ☑ Up to date

Remarks: Monthly O&M reports available onsite. OSHA records for contractors, subcontractors, and visitors to the site are stored onsite.

Permits and Service Agreements

Air discharge permit Readily available Up to date
☑ Effluent discharge ☑ Readily available ☑ Up to date
☑ Waste disposal, POTW ☑ Readily available ☑ Up to date
Other permits _____ Readily available Up to date

Remarks: Effluent discharge permits for discharge to Pyrite Creek and to the Santa Ana Regional Interceptor (SARI) pipeline were available for review during the site inspection. Documentation of profiles for disposal of filter cake waste to offsite landfills also available. The site does not have an air discharge permit.

Gas Generation Records Readily available Up to date ☑ N/A

Remarks:

Settlement Monument Records Readily available Up to date ☑ N/A

Remarks:

☑ **Groundwater Monitoring Records** ☑ Readily available ☑ Up to date

Remarks: Semiannual groundwater monitoring reports available onsite.

☑ **Leachate Extraction Records** ☑ Readily available ☑ Up to date

Remarks: Analytical and flow rate data for groundwater extraction wells available in monthly operations, maintenance, and monitoring reports. The most recent report for February 2006 was available for review during the site inspection.

☑ **Discharge Compliance Records**

Air	Readily available	Up to date
☑ Water (effluent)	☑ Readily available	☑ Up to date

Remarks: Effluent compliance is evaluated in the monthly operations, maintenance, and monitoring reports. Effluent data are provided in these reports. Air discharge data is not recorded. The site does not currently have a permit for discharges to air.

Daily Access/Security Logs ☑ Readily available ☑ Up to date

Remarks: Site access logs included in monthly operations, maintenance, and monitoring reports.

IV. O&M COSTS

O&M Organization

PRP in-house: DTSC Contractor for PRP: Earth Tech and Geologic Associates

O&M Cost Records

Readily available Up to date

Funding mechanism/agreement in place ☑ Not available

Original O&M cost estimate_____ Breakdown attached

Total annual cost by year for review period if available

	Date	Date	Total cost	
From	_____	To _____	_____	Breakdown attached
From	_____	To _____	_____	Breakdown attached

Remarks: Costs were not made available by DTSC for evaluation as during the five-year review.

Unanticipated or Unusually High O&M Costs During Review Period

Describe costs and reasons: Additional contaminants of concern (perchlorate, pesticides, NDMA, 1,4-dioxane) were identified during the review period that resulted in changes to on-site O&M. Upgrades to the PTP were made during the review period to treat pesticides in groundwater before metal and VOC treatment. Treatment of pesticide-laden filter cake, which requires incineration, resulted in increased costs associated with operation of the PTP. Polymer resin columns were added to the community wellhead treatment system to treat perchlorate in Zone 4. The columns require replacement approximately every two months, resulting in expenses of approximately $12,000 every two months.

V. ACCESS AND INSTITUTIONAL CONTROLS

A. Fencing

☑ **Fencing**

Remarks: Fencing is in good condition, and surrounds Zone 1 and the three treatment systems

(PTP, LCTF, and CWTS). Fences are locked, and no indication of vandalism to fencing was noted during the site inspection.

B. Other Access Restrictions

☑ **Signs and other security measures**

Remarks: Signage posted on fence to prevent trespassers from entering secure portions of the site. A security guard (Seibert Security, Inc.) is stationed adjacent to the PTP and entrance to Zone 1 between 7 A.M. and 5 P.M. All visitors to the site must sign in with the security guard between these hours. A security guard patrols the grounds of the site on an hourly basis between 5 P.M. and 7 A.M. to ensure trespassers are not present on site.

C. Institutional Controls

Implementation and enforcement

Site conditions imply ICs not properly implemented	Yes	No	☑ N/A
Site conditions imply ICs not being fully enforced	Yes	No	☑ N/A

Remarks: No institutional controls have been recorded for the site.

Reporting is up-to-date	Yes	No	☑N/A
Reports are verified by the lead agency	Yes	No	☑ N/A
Specific requirements in deed or decision documents have been met	Yes	No	☑ N/A
Violations have been reported	Yes	No	☑ N/A

Other problems or suggestions: Institutional controls should be recorded to prevent disturbance of soil in the original disposal area in Zone 1, to prohibit construction of structures in Zones 1 and 2, and to further prevent unauthorized uses of groundwater in the Glen Avon community area in Zone 4.

Adequacy ICs are adequate ☑ ICs are inadequate N/A

Remarks: Please refer to the review of ICs in the Five-year Review Report (Appendix E).

D. General

Vandalism/trespassing

Remarks: No indications of vandalism were observed during the site inspection. Mr. Kostecki indicated that vehicles occasionally crash into the entry gate to the former disposal area. In addition, children from nearby communities occasionally trespass onto the site, but no significant vandalism has been recorded as a result of this trespass activity.

Land use changes onsite

Remarks: No significant changes during the period. Quarry operations are being performed in Zones 2 and 3 (off DTSC property).

Land use changes offsite

Remarks: Housing developments have been constructed to the north of the site (other side of the hill located north of the site).

VI. GENERAL SITE CONDITIONS

A. Roads ☑ Applicable

Roads ☑ Location shown on site map ☑ Roads adequate
Remarks:

B. Other Site Conditions

Remarks:

VII. LANDFILL COVERS

A. Landfill Surface

☑ **Settlement** (Low spots)
Remarks: Some settlement is occurring across the former disposal areas. The degree of settlement is not quantified through monitoring. An area of subsidence within the southern disposal area was capped with drill cuttings and asphalt in the early 1990s.

Cracks Location shown on site map ☑ Cracking not evident
Remarks:

☑ **Erosion** Location shown on site map ☑ Erosion not evident
Remarks: No significant erosion observed during the site inspection.

☑ **Holes** ☑ Location shown on site map Holes not evident
Areal extent: Approximately 3-feet in diameter. Depth: Approximately five feet.
Remarks: A sinkhole was identified at the southern edge of the northern former disposal area during the week of April 3, 2006 following a heavy rainfall event, and was evident during the site inspection. The cause of the sinkhole is being evaluated by Geologic Associates. Sinkholes have not been observed at the site previously.

☑ **Vegetative Cover** Grass ☑ Cover properly established No signs of stress
Remarks: Weeds and sunflowers are growing on the surface of the cover. The cover needs maintenance, which will be performed at the end of the rain season.

Alternative Cover (armored rock, concrete, etc.) ☑ N/A
Remarks

Bulges Location shown on site map ☑ Bulges not evident
Areal extent_____ Height
Remarks

Wet Area/Water Damage ☑ Wet areas/water damage not evident
Wet areas Location shown on site map Areal extent
Ponding Location shown on site map Areal extent
Seeps Location shown on site map Areal extent
Soft subgrade Location shown on site map Areal extent
Remarks: Groundwater levels beneath the former ponds are maintained through pressure transducers in extraction wells. No ponding was observed during the site inspection.

Slope Instability Slides Location shown on site map ☑ No evidence of slope instability
Areal extent
Remarks

B. Benches ☑ N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

Flows Bypass Bench Location shown on site map N/A or okay
Remarks

Bench Breached Location shown on site map N/A or okay
Remarks

Bench Overtopped Location shown on site map N/A or okay
Remarks

C. Letdown Channels ☑ N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

Settlement Location shown on site map No evidence of settlement
Areal extent_____ Depth
Remarks

Material Degradation Location shown on site map No evidence of degradation
Material type_____ Areal extent
Remarks

Erosion Location shown on site map No evidence of erosion
Areal extent_____ Depth
Remarks

Undercutting Location shown on site map No evidence of undercutting
Areal extent_____ Depth
Remarks

Obstruction Type_____ No obstruction
Location shown on site map Areal extent
Size
Remarks

Excessive Vegetative Growth Type
No evidence of excessive growth
Vegetation in channels does not obstruct flow
Location shown on site map Areal extent
Remarks

D. Cover Penetrations ☑ Applicable

Gas Vents Active Passive Properly secured/located Functioning Routinely sampled Good condition Evidence of leakage at penetration ☑N/A Remarks
2. **Gas Monitoring Probes** Properly secured/located Functioning Routinely sampled Good condition Evidence of leakage at penetration ☑N/A Remarks
☑ **Monitoring Wells** (within surface area of landfill) ☑ Properly secured/located ☑ Functioning ☑ Routinely sampled ☑ Good condition Evidence of leakage at penetration Remarks
☑ **Leachate Extraction Wells** ☑Properly secured/located ☑ Functioning ☑ Routinely sampled ☑ Good condition Evidence of leakage at penetration Needs O&M N/A Remarks
Settlement Monuments Located Routinely surveyed ☑N/A Remarks
E. Gas Collection and Treatment ☑ N/A
Gas Treatment Facilities Flaring Thermal destruction Collection for reuse Good condition Needs O&M Remarks
2. **Gas Collection Wells, Manifolds and Piping** Good condition Needs O&M Remarks
Gas Treatment Facilities (e.g., gas monitoring of adjacent homes or buildings) Good condition Needs O&M N/A Remarks
F. Cover Drainage Layer ☑ Applicable N/A
Outlet Pipes Inspected ☑ Functioning N/A Remarks: No debris or other blockage in outlet pipe.
Outlet Rock Inspected Functioning ☑ N/A Remarks
G. Detention/Sedimentation Ponds ☑ N/A

Siltation Areal extent_____ Depth_____ N/A
Siltation not evident
Remarks

Erosion Areal extent_____ Depth
Erosion not evident
Remarks

Outlet Works Functioning N/A
Remarks

Dam Functioning N/A
Remarks

H. Retaining Walls ☑ N/A

Deformations Location shown on site map Deformation not evident
Horizontal displacement_____ Vertical displacement
Rotational displacement_____
Remarks

Degradation Location shown on site map Degradation not evident
Remarks

I. Perimeter Ditches/Off-Site Discharge ☑ Applicable N/A

Siltation Location shown on site map ☑ Siltation not evident
Remarks: Minimal siltation observed in discharge channels, indicating minimal erosion from the cap.

Vegetative Growth ☑ Location shown on site map N/A
Vegetation does not impede flow
Areal extent_____ Type: Various weeds.
Remarks: A portion of the surface water discharge channel is not lined with concrete (in Zones 2 and 3). Significant vegetative growth in this portion of the discharge channel, impeding the flow of surface water along the discharge channel. Much of the surface water in this section of the discharge channel likely infiltrates through the subsurface to the water table.

Erosion Location shown on site map ☑ Erosion not evident
Remarks:

Discharge Structure ☑ Functioning N/A
Remarks: Discharge weir at the surface water discharge channel in Zone 2.

VIII. VERTICAL BARRIER WALLS

Settlement Location shown on site map Settlement not evident ☑ Settlement not recorded.
Depth: 30 to 80 feet bgs.
Remarks: Clay barrier dam between Zones 1A and 1B.

Performance Monitoring Type of monitoring
☑ Performance not monitored
Frequency_____ Evidence of breaching
Head differential
Remarks:

IX. GROUNDWATER/SURFACE WATER REMEDIES

A. Groundwater Extraction Wells, Pumps, and Pipelines ☑ Applicable

Pumps, Wellhead Plumbing, and Electrical
☑ Good condition All required wells located Needs O&M N/A
Remarks:

Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances
☑ Good condition Needs O&M
Remarks: Extraction wells are being taken out of service (one at a time) to be redeveloped, and are then placed back in service.

Spare Parts and Equipment
☑ Readily available Good condition Requires upgrade Needs to be provided
Remarks: Pressure transducers in the extraction wells are replaced as needed, and calibrated annually.

B. Surface Water Collection Structures, Pumps, and Pipelines ☑ N/A

Collection Structures, Pumps, and Electrical
Good condition Needs O&M
Remarks

Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances
Good condition Needs O&M NA
Remarks

Spare Parts and Equipment
Readily available Good condition Requires upgrade Needs to be provided NA
Remarks

C. Treatment System ☑ Applicable

Treatment Train (Check components that apply)

☑ Metals removal Oil/water separation Bioremediation
Air stripping ☑ Carbon adsorbers
☑ Filters
☑ Additive (e.g., chelation agent, flocculent)
☑ Good condition Needs O&M
☑ Sampling ports properly marked and functional
☑ Sampling/maintenance log displayed and up to date
☑ Equipment properly identified
Quantity of groundwater treated annually: Approximately 45 million gallons treated annually
Quantity of surface water treated annually: 0
Remarks: The PTP is in the process of being upgraded. Upgrades include installation of a rapid mix and flocculator to the pesticide removal system and installation of an air stripper to optimize VOC removal from air. The filter press on the PTP was replaced in 2005.

Electrical Enclosures and Panels (properly rated and functional)

N/A ☑ Good condition Needs O&M
Remarks

Tanks, Vaults, Storage Vessels

N/A ☑ Good condition
Remarks

Discharge Structure and Appurtenances

☑ Good condition Needs O&M
Remarks: Effluent from PTP and LCTF is held in onsite tanks, before being pumped through an effluent pipeline to the SARI pipeline. Effluent from the CWTS is discharged directly to Pyrite Creek.

Treatment Building(s) – support building

☑ N/A Good condition (especially roof and doorways) Needs repair
Chemicals and equipment properly stored
Remarks

Monitoring Wells (pump and treatment remedy)

☑ Properly secured/locked ☑ Functioning ☑ Routinely sampled ☑ Good condition
All required wells located Needs O&M N/A
Remarks

D. Monitored Natural Attenuation ☑ N/A

Monitoring Wells (natural attenuation remedy)

Properly secured/locked Functioning Routinely sampled Good condition
All required wells located Needs O&M
Remarks

X. OTHER REMEDIES
If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.
XI. OVERALL OBSERVATIONS
A. Implementation of the Remedy
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (that is, to contain contaminant plume, minimize infiltration and gas emission, etc.). The purpose of the remedy at the site is to prevent the migration of contaminants in groundwater, extract and treat contaminated groundwater, and prevent direct and indirect contact with contaminated media. The remedy identified in the RODs for the site has been implemented as prescribed in the RODs. Improvements to the treatment systems have been made as new contaminants are identified in groundwater at the site. Contaminant concentrations are generally stable or are decreasing with time. The remedy is effective and is functioning as designed.
B. Adequacy of O&M
Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. In general, the O&M at the site is adequate.

C.	Early Indicators of Potential Remedy Failure
	Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future. Elevated concentrations of perchlorate were detected at the site since the last ROD. Polymer resin canisters were consequently added to the CWTS to treat perchlorate, and treatment of perchlorate commenced in 2003. While the existing CWTS is serving to extract and treat perchlorate-contaminated groundwater in Zone 4, additional investigation is required to define the extent of perchlorate in Zone 4 and to facilitate the selection of a remedy to address the perchlorate in groundwater. A RI/FS is currently underway to address this issue. In addition, higher than expected pesticide levels were detected in groundwater extracted from new Zone 1 extraction wells that started operating in 2003. This resulted in premature breakthrough of the GAC canisters in the PTP. In addition, incineration was required on the filter cake due to elevated pesticide concentrations. Consequently, improvements were made to the PTP to specifically treat pesticides in groundwater by installing a pesticide removal system as the first step in treatment at the PTP. The goal of the pesticide removal system was to reduce the load of pesticides to the downstream processes in the PTP and to improve the overall efficiency of the PTP. Other improvements to the PTP have been performed as necessary. A new PTP is currently being designed to treat new contaminants that have been detected at elevated concentrations since the last ROD was recorded.
D.	**Opportunities for Optimization**
	Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. Previous modeling studies have shown that the existing groundwater extraction systems in Zones 2 and 3 may not efficiently intercept and capture site-related contaminants in deeper flow channels and weathered bedrock units. The effectiveness of the existing extraction systems in Zones 2 and 3 should be evaluated to identify the need for system upgrades and/or system optimization.